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COMMONWEALTH OF MASSACHUSETTS

DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY

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Competitive Metering, Billing and Information Services) D.T.E. 00-41

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INITIAL COMMENTS OF

SCHLUMBERGER RESOURCE MANAGEMENT SERVICES

Schlumberger Resource Management Services ("Schlumberger RMS") is pleased to offer the following comments in response to the Notice of Inquiry of the Massachusetts Department of Telecommunication and Energy ("Department") into whether metering and other services should be unbundled.

Schlumberger RMS provides technology and services to obtain, measure, communicate, and analyze data on resource production, distribution, and consumption. In May 2000, Schlumberger acquired the assets of CellNet Data Systems, a leading provider of wireless data telemetry services, primarily network meter reading (NMR). Over 4 million meters are connected to CellNet networks, with nearly 8 million meters under contract.

In the comments that follow, Schlumberger RMS describes the benefits of advanced metering and the crucial role that it plays in the competitive electric market. Schlumberger RMS is neutral as to whether metering should be made competitive. However, it does ask that the Department provide regulatory certainty on this question as soon as possible so that the appropriate parties can move forward with investments in advanced metering and thereby capture its benefits.

I. THE BENEFITS OF ADVANCED METERING

As the Department has noted, the deployment of advanced metering is "essential" if customers are to enjoy the full benefits of electric competition.

[T]he installation of metering equipment capable of recording and transmitting hourly load data is an essential component of having customers enjoy the full benefits of a competitive generation market. Only with the installation of such equipment would customers have the necessary information and the proper incentives to adjust their consumption patterns based on price signals. Model Terms and Conditions, D.P.U./D.T.E. 97-65 (December 31, 1997) p. 58.

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Advanced metering brings many benefits to both the competitive generation market and the monopoly utility distribution system. These benefits accrue directly to customers, increasing choices, reducing costs, and improving service.

A. The Benefits of Advanced Metering for the Competitive Generation Market

1. Reducing Electricity Prices

As the Department pointed out in D.P.U./D.T.E. 97-65, the availability of advanced metering gives customers "the necessary information and the proper incentives to adjust their consumption patterns based on price signals." This produces savings in three ways.

First, the individual customers that shift usage to off-peak periods pay lower prices. The savings can be significant: Southern California Edison customers on one time-of-use rate plan reduced their costs by an average of 16%. (1)

Second, even customers who do not choose time-of-use or real-time-pricing rates achieve significant savings from better energy usage information provided by advanced metering. In a wide range of studies, customers showed reductions in energy use averaging over 10% when such customers had energy usage data going beyond the monthly meter read. (2)

Third, advanced metering benefits all customers by causing market energy prices to drop. Like all commodity prices, market electricity prices are driven by supply and demand. When some customers respond to price signals by shifting load, it causes the system peak to drop, which causes market prices to drop. This benefits all customers, whether or not they shift load.

In a study for the US DOE, Science Applications International Corp. quantified this very benefit for the state of New York. (3) Even using "very conservative" assumptions about the amount of load shifting that would occur, they concluded that customer response to price signals would reduce average spot market prices in New York by 3.2% to 4.9%.

Importantly, at peak periods a small reduction in demand can have a very big effect on prices. Robert Levin, vice president of the New York Mercantile Exchange, described this phenomenon in testimony before Congress regarding the Midwest price spikes of June 1998. On June 25th, prices in the wholesale market spiked to over \$7.00 per kWh. However, Mr. Levin explained to Congress that "a five percent reduction in demand at that point could have dropped some of these prices 80 or 90 percent." (4)

In its report on those price spikes, the Federal Energy Regulatory Commission staff listed lack of customer demand response as one of the seven primary factors: "The fact that retail customers had no incentive to adjust their usage based on price contributed to the price spike. Retail competition, coupled with the ability to respond in real time, could allow customers to see the price of the power they use and react accordingly." (5)

Given that demand response can materially affect wholesale peak prices, it is important to know whether, in fact, electricity customers would reduce peak consumption given appropriate price signals. The experience has been that electric consumers do exhibit price elasticity, and that smaller customers exhibit greater price elasticity, on average, than large customers. Dozens of studies have been conducted of time-of-use rates and real-time pricing, with the consistent finding that such elasticity exists and is material. The Electric Power Research Institute ("EPRI") and Edison Electric Institute ("EEI") published a comprehensive study documenting these results. (6) In one case, as an example, at Pacific Gas and

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Electric residential customers reduced peak load by 20 percent on time-of-use rates. (7)

2. A Remedy for Market Power

Advanced metering is an important remedy for market power, particularly that of generators during peak demand times, when available capacity becomes scarce.

Frank Wolak of Stanford University and Robert Patrick of Rutgers University, both economics professors, studied market power in the U.K. and found that the lack of hourly metering enables generators to manipulate market prices for energy and capacity, resulting in excess profits. (8) The economists examined four years of market prices and generator bidding. They found that the two major generators "were able to obtain prices for their output substantially in excess of their marginal costs of generation." Among the conditions that made this possible was the fact that the generators knew that the "total residual expected demand they are competing over is independent of the bid prices they submit." (9) In other words, there would be no customer demand response, no matter what prices they bid. Accordingly, the economists concluded that "[p]erhaps the most important lesson from the E&W [England and Wales] experience is the necessity of building in the potential for demand-side responses by customers into the price determination process." (10)

3. Enhancing System Reliability

Of course, extremely tight wholesale market conditions not only produce extreme prices, they also threaten system reliability. This summer, utilities in both California and New York have had to implement blackouts because demand exceeded supply. A major contributing factor to these problems has been the absence of customer price response. The vast majority of customers have no incentive to reduce usage even when wholesale prices spike because customers pay the same price per kWh regardless of when they use electricity. However, if customers had hourly meters, they would see and respond to price spikes. This would enable price to bring supply and demand into balance, as it does in other competitive industries, thus improving reliability.

4. Enabling Customer Choice

The availability of advanced metering also increases choices for customers. Advanced metering enables suppliers to offer and customers to choose from a variety of pricing plans, such as hourly rates, time-of-use rates, and low-priced weekends. As explained above, the limited experience with such plans in the regulated electric industry shows that customers do take advantage of and benefit from them. Perhaps more significantly, time-of-use pricing plans are common and popular in other competitive industries. Vacationers regularly fly on weekends to obtain discounted airfares and avoid the higher, "on-peak" fares paid by business travelers. Similarly, vast numbers of customers have opted for MCI's "5 cent Sundays" calling plan.

5. Enabling load control products and services

Advanced metering enables a new generation of smart devices that see and respond to price signals. For example, Puget Sound Energy ("PSE") has equipped 200 of its customers with a Home Comfort Control Thermostat. Using a CellNet advanced metering network, PSE sends a signal to the thermostat to adjust the temperature in the home during periods of peak demand. Customers are free to override the adjustment, and the CellNet network informs PSE which customers have done so.

The advanced metering network plays two important roles. First, it provides the two-way communications link between PSE and its customers - sending meter data from the customer to PSE and signals from PSE to the customer's thermostat.

Second, the advanced metering system records the customers' hourly electric usage. In a competitive electric market, this hourly usage data is essential to enabling

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customers to obtain lower prices in return for reducing usage at peak periods.

6. Improving Supplier Forecasting

Competitive suppliers must forecast their customers' usage on a daily basis in order to schedule the next day's power deliveries. Suppliers can forecast much more accurately if they have access to daily meter reads. Relying on monthly reads as the basis for daily forecasting increases inaccuracy and risk, which leads to increased costs for suppliers and ultimately customers.

B. The Benefits of Advanced Metering for Distribution Service

The benefits of advanced metering are not limited to the competitive generation market. Advanced metering networks also reduce the cost and improve the quality of distribution service. Utilities such as Kansas City Power and Light that have implemented network meter reading ("NMR") for hundreds of thousands of customers have documented the following additional benefits:

1. Reduced Metering Reading Costs

Advanced meter reading networks reduce metering reading costs, including costs of labor, vehicles, and equipment.

2. Energy Theft

According to Cambridge Energy Research Associates, energy theft equals 2% of utility revenues. NMR systems incorporate a number of alarms that can virtually eliminate theft. For example, usage on accounts that are vacant or have been disconnected is immediately identified and generates an alarm.

3. Outage Detection and Service Restoration

During power outages, NMR systems enable utilities to detect exactly which customers are without service. This enables utilities to identify the most critical problems and to manage their power restoration efforts more efficiently.

4. Virtual Connect/Disconnect

NMR systems enable utilities to employ virtual disconnections and connections. This avoids the cost of a field visit and physical disconnections.

5. Improved Customer Service and Fewer Special Meter Reads

With an NMR system, the utility can read a customer's meter remotely on-demand. This greatly reduces the need for special meter reads to resolve high bill complaints.

6. Improved Distribution Plant Asset Utilization

The information provided by NMR systems enables utilities to optimize their transformer loading, circuit balancing, and system planning. As a result, utilities are better able to maintain service during storms and shortages and to maximize the efficiency of distribution plant investments.

II. THE NEED FOR REGULATORY CERTAINTY

Regardless of whether the Department decides for or against competitive metering, it is important to provide as much certainty as possible as soon as possible.

For the last several years, Massachusetts has been in a state of maximum uncertainty. The Massachusetts restructuring act provides that metering is not competitive for now, but that it might become competitive in 2001. (11)

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Under these conditions, it is extremely difficult for any party to deploy advanced metering. Competitive suppliers are of course prohibited from installing advanced metering because metering remains a monopoly service. However, while utilities are allowed to deploy advanced metering, they are discouraged from doing so by the possibility that metering might become competitive soon. Advanced metering systems require an upfront investment to achieve savings and other benefits over time. With the prospect of competitive metering on the horizon, utilities have had no guarantee that they will be able to recoup that upfront investment.

The end-result is that customers are losing out on the benefits that advanced metering would provide. Electricity prices are higher than should be and reliability is threatened because there is no meaningful customer price response. Customers have very limited choices of pricing plans and load control products and services. Suppliers bear unnecessary forecasting risk and utilities are not using the latest technology to reduce distribution system costs and improve service.

Once the Department provides the necessary certainty regarding whether metering will be made competitive, the appropriate parties will be able to provide advanced metering to customers. Only then will customers realize the full benefits of electric competition.

Respectfully submitted,

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2. 2 Katzev and Johnson, Promoting Energy Conservation, An Analysis of Behavioral Research, Westview Press (1987).
3. 3 Centolella, The Structure of Competitive Power Markets, Science Applications International Corp. for US DOE, pp. 7-20 to 7-24 (January 1997).
4. 4 Hearing before the Subcommittee on Energy and Power of the Committee on Commerce House of Representatives, Serial No. 105-115, p. 45 (July 15, 1998).
5. 5 Staff Report to the Federal Energy Regulatory Commission on the Causes of Wholesale Electric Pricing Abnormalities in the Midwest During June 1998, p. 4-6 (September 22, 1998).
6. 6 EPRI and EEI, Impact of Demand-Side Management on Future Customer Electricity Demand: An Update, Research Report 2863-8 (September 1990).
7. 7 Load Shifting Under Voluntary Residential Time-of-Use Rates, Energy Journal 10:4, (October 1989).
8. 8 Wolak and Patrick, The Impact of Market Rules and Market Structure on the Price Determination Process in the England and Wales Electricity Market (June 1996).
9. 9 Id, p. 21.
10. 10 Id, p. 51.
11. 11 Chapter 164 of the Acts of 1997, § 312.